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C16-M/CHOT/RAC-104**6054****BOARD DIPLOMA EXAMINATION, (C-16)****OCT/NOV—2018****DME—FIRST YEAR EXAMINATION****ENGINEERING CHEMISTRY AND
ENVIRONMENTAL STUDIES***Time : 3 hours]**[Total Marks : 80*

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State and explain Aufbau's principle.
2. Draw the shapes of *s*, *p* and *d* orbitals.
3. Define mole. Calculate the number of moles in 200 g of CaCO₃?
4. Define buffer solution. Write any two applications of buffer solutions.
5. Define conductors, electrolytes and nonelectrolytes.

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6. Write the formulas of salts causing hardness of water.
7. Define elastomers. Write any two uses of (a) Buna-s and (b) Neoprene rubber.
8. Write any three characteristics of good fuel.
9. Define primary and secondary air pollutants. Give one example of each.
10. Define renewable and nonrenewable energy sources. Give one example of each.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- * 11. (a) State the postulates of Bohr's atomic model.
- (b) Define covalent bond. Explain the formation of O_2 and N_2 .
12. (a) Define normality. Calculate the equivalent weight of H_2SO_4 , Na_2CO_3 [GMW of H_2SO_4 98 and GMW of Na_2CO_3 106]
- (b) Explain Bronsted-Lowry theory of acids, bases, neutralization and give two limitations.

- 13.** (a) Explain the process of froth floatation with neat diagram.
- (b) Define roasting, calcination and smelting. Give one example each.
- 14.** (a) State and explain Faraday's laws of electrolysis.
- (b) Calculate the amount of copper deposited if 10 ampere current passes through its salt solution for 10 minutes. [Atomic weight of Cu is 63.5 and valency $Z = 2$]
- 15.** (a) What is rusting of iron? Explain the mechanism of rusting of iron with chemical equations.
- (b) Explain metallic coatings and nonmetallic coatings.
- 16.** (a) Explain softening of hard water by permutit method with a neat diagram.
- (b) Define reverse osmosis. Write any three advantages of reverse osmosis.
- 17.** (a) Write any five differences between thermoplastics and thermo-setting plastics.
- (b) Write any five advantages of plastics over traditional materials.
- 18.** (a) Define air pollution. Explain any five causes for air pollution.
- (b) Write a short note on acid rain.
